

[IEEE HOME](#) | [SEARCH IEEE](#) | [SHOP](#) | [WEB ACCOUNT](#) | [CONTACT IEEE](#)[Membership](#) | [Publications/Services](#) | [Standards](#) | [Conferences](#) | [Careers/Jobs](#)**IEEE Xplore[®]**
RELEASE 1.5Welcome
United States Patent and Trademark Office[Help](#) | [FAQ](#) | [Terms](#) | [IEEE Peer](#) | [Quick Links](#) | [Review](#)

» Basic

Welcome to IEEE Xplore[®]

- ☐ Home
- ☐ What Can I Access?
- ☐ Log-out

Tables of Contents

- ☐ Journals & Magazines
- ☐ Conference Proceedings
- ☐ Standards

Search

- ☐ By Author
- ☐ Basic
- ☐ Advanced

Member Services

- ☐ Join IEEE
- ☐ Establish IEEE Web Account
- ☐ Access the IEEE Member Digital Library

- 1) Enter keywords in one or more text boxes.
- 2) Select the fields to search for each keyword.
- 3) Select search operators when using multiple keywords.
- 4) Limit the results by selecting Search Options.
- 5) Click Search. See [Search Examples](#)

 In:
 In:
 In:
 Note: This function returns plural and suffixed forms of the keyword(s).**Search Options:****Select publication types:**

- ☒ IEEE Journals
- ☒ IEE Journals
- ☒ IEEE Conference proceedings
- ☒ IEE Conference proceedings
- ☒ IEEE Standards

Select years to search:From year: to **Organize search results by:**Sort by: In: orderList Results per page

[Home](#) | [Log-out](#) | [Journals](#) | [Conference Proceedings](#) | [Standards](#) | [Search by Author](#) | [Basic Search](#) | [Advanced Search](#)
[Join IEEE](#) | [Web Account](#) | [New this week](#) | [OPAC Linking Information](#) | [Your Feedback](#) | [Technical Support](#) | [Email Alerting](#) | [No Robots Please](#) |
[Release Notes](#) | [IEEE Online Publications](#) | [Help](#) | [FAQ](#) | [Terms](#) | [Back to Top](#)

Copyright © 2003 IEEE — All rights reserved

[IEEE HOME](#) | [SEARCH IEEE](#) | [SHOP](#) | [WEB ACCOUNT](#) | [CONTACT IEEE](#)[Membership](#) | [Publications/Services](#) | [Standards](#) | [Conferences](#) | [Careers/Jobs](#)**IEEE Xplore[®]**
RELEASE 1.5Welcome
United States Patent and Trademark Office[Help](#) | [FAQ](#) | [Terms](#) | [IEEE Peer](#) | [Quick Links](#)» [Bas](#)**Welcome to IEEE Xplore[®]**

- ☐ Home
- ☐ What Can I Access?
- ☐ Log-out

Tables of Contents

- ☐ Journals & Magazines
- ☐ Conference Proceedings
- ☐ Standards

Search

- ☐ By Author
- ☐ Basic
- ☐ Advanced

Member Services

- ☐ Establish IEEE Web Account
- ☐ Access the IEEE Member Digital Library

- 1) Enter keywords in one or more text boxes.
- 2) Select the fields to search for each keyword.
- 3) Select search operators when using multiple keywords.
- 4) Limit the results by selecting Search Options.
- 5) Click Search. See [Search Examples](#)

 In:
 ▼ ▼ **In:**
 ▼ ▼ **In:**
 ▼

Note: This function returns plural and suffixed forms of the keyword(s).

Search Options:**Select publication types:**

- ☒ IEEE Journals
- ☒ IEE Journals
- ☒ IEEE Conference proceedings
- ☒ IEE Conference proceedings
- ☒ IEEE Standards

Select years to search:From year: ▼ to **Organize search results by:**Sort by: ▼In: ▼ orderList ▼ Results per page

[Home](#) | [Log-out](#) | [Journals](#) | [Conference Proceedings](#) | [Standards](#) | [Search by Author](#) | [Basic Search](#) | [Advanced Search](#)
[Join IEEE](#) | [Web Account](#) | [New this week](#) | [OPAC Linking Information](#) | [Your Feedback](#) | [Technical Support](#) | [Email Alerting](#) | [No Robots Please](#) |
[Release Notes](#) | [IEEE Online Publications](#) | [Help](#) | [FAQ](#) | [Terms](#) | [Back to Top](#)

Copyright © 2003 IEEE — All rights reserved